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By-Di Lorenzo, Louis T.; And Others

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Descriptors-Cultural Disadvantagement, *Curriculum Development, Economic Disadvantagement, *Educationally Disadvantaged, *Preschool Curriculum, *Reading Comprehension

This project was undertaken to establish a basis for a compensatory curriculum for disadvantaged preschool children by using existing empirical data to identify factors that predict success in reading comprehension and that differentiate the disadvantaged from the nondisadvantaged. The project focused on factors related to success in learning to read, which was equated with reading comprehension. The literature on reading and on the disadvantaged was reviewed, and lists of factors predicting success in reading comprehension and differentiating between disadvantaged and nondisadvantaged children were established. Common factors from the lists of predictors and differentiators in their final rank order were (1) reading letters and numbers, (2) auditory discrimination, (3) figure and pattern copying, (4) auditory word association and analogy, (5) auditory word-picture discrimination, (6) figure and pattern matching, and (7) visual design memory and recall. References and tables are included. (WB)

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EMPIRICAL BASES FOR A PREKINDERGARTEN CURRICULUM FOR DISADVANTAGED CHILDREN

Louis T. Di Lorenzo, Ruth Salter
Robert Hayden

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As part of its war on poverty, our nation has made available large sums of money for preschool programs for disadvantaged children. This action stems from a recognition of the critical importance of the early years of life and the fact that young disadvantaged children differ markedly from their middle-class peers on aspects of development related to future school success. Accordingly, preschool programs for the disadvantaged are intended to provide children of deprived backgrounds with compensatory educational experiences that will prepare them for later learning. In spite of this intention, the great majority of the prekindergarten programs supported by state and federal funds have been patterned after day-care or nursery school programs with no provision for the special learning needs of the disadvantaged. The innovative programs that have been undertaken to accomplish specific educational goals are, for the most part, based on theory and conjecture rather than on empirical findings about the deprived and the prerequisites for school achievement.

The project here reported was undertaken in an effort to establish a basis for the development of a truly compensatory curriculum for disadvantaged preschool children by using existing empirical data to identify factors which predict success in reading comprehension and differentiate the disadvantaged and the nondisadvantaged. The project focused on factors related to success in learning to read inasmuch as the mastery of this basic skill is essential for all academic achievement. Success in learning to read was equated with reading comprehension as the real purpose of reading is to understand the meaning of the printed word.

Procedures

Intensive reviews were made of the literature on reading and the literature on the disadvantaged and the culturally deprived in order to identify predictors of success in reading comprehension and differentiators of the disadvantaged and the nondisadvantaged at the primary and pre-primary levels. These reviews were undertaken by four research interns* who worked independently and then synthesized their findings.

The review of the literature on reading produced a list of 30 variables purported to predict success in reading comprehension. This list was reduced to nine factors by the elimination of variables not empirically demonstrated to be related to reading comprehension or not subject to control in a school setting, and by the consolidation of variables which had common operational definitions or were measured by the same test instruments.

The review of the literature on the disadvantaged revealed only four characteristics which were empirically established as differentiating between the disadvantaged and nondisadvantaged and which were related to reading and amenable to control in a classroom situation. To amplify this list, unpublished findings from an ongoing study of Prekindergarten Programs for the Disadvantaged conducted by the New York State Education Department's Office of Research and Evaluation were used. The resulting list contained eight differentiators.

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*Robert Hayden and Lloyd Murdoch, State University of New York at Albany; Laura Harckham, Fordham University; and James Shea, New York University--participants in ESEA Title IV Research Training Program sponsored cooperatively by New York State Education Department and universities.

The factors identified as predictors and/or differentiators are listed in Table 1.

As a means of verifying the completeness of the research reviews, the list of predictors and differentiators were forwarded to authorities in the fields of reading and the disadvantaged respectively. These experts were given behavioral definitions, research citations, and test measures for each factor and were asked to verify the list received, to rank the factors on the basis of their importance as predictors or differentiators, and to add and include in their ranking any factor overlooked. There were no changes in the list of predictors and differentiators as a result of the responses to these requests.

In order to compare data from different studies and to have a basis for ordering the predictors and differentiators so as to establish priorities for curriculum development, it was necessary to convert diverse tests of significance reported in the literature to a common correlational form. The formula used for the conversion of t values to Pearsonian r's was $r = \sqrt{\frac{t^2}{n - 2 + t^2}}$. With F being equal to t^2, the same formula was used for F ratios. The obtained correlations along with those appearing in the research were changed to z scores by the Fisher transformation. The z scores for each predictor and each differentiator were averaged and the results transformed to Pearsonian r's. The nine predictors of success in reading comprehension and the eight differentiators between the disadvantaged and the nondisadvantaged were then ranked according to the magnitude of their average correlations. (See Table 1.) There were seven common factors among the predictors and differentiators: Reading Letters and Numbers,

TABLE 1

Factors Predicting Success in Reading Comprehension and Differentiating Between Disadvantaged and Nondisadvantaged Children Identified Through Review of Research Literature

Factor	As Predictor		As Differentiator		Composite Rank	Final Rank
	Avg. Corr. with Reading Comprehension	Rank	Avg. Corr. with Socioec. Status	Rank		
Reading Letters & Numbers (P-1,8,20; D-6)*	.52	1	.53	1	2	1
Visual Word Discrimination (P-8,14,18, 20, 21)	.50	2	**	**	---	---
Auditory Word Association & Analogy (P-12; D-5,6,10,17)	.46	3.5	.28	6	9.5	4
Figure & Pattern Copying (P-9,21; D-6)	.46	3.5	.30	5	8.5	3
Auditory Discrimination (P-2,4,7,18; D-3,5)	.43	5	.49	2	7	2
Auditory Word-Picture Discrimination (P-7,18; D-5,6,10)	.40	6	.32	4	10	5.5
Figure & Pattern Matching (P-9,11,14,18,21; D-6)	.36	7	.36	3	10	5.5
Auditory Memory (P-12,15)	.34	8	**	**	---	---
Visual Design Memory & Recall (P-12,14; D-6)	.30	9	.17	8	17	7
Concept Formation (D-5,10,17)	***	***	.24	7	---	---

* P numbers indicate references for predictors.
D numbers indicate references for differentiators. (See page 13.)

** No data on factor as differentiator.

*** No data on factor as predictor.

Auditory Word Association and Analogy, Figure and Pattern Copying, Auditory Discrimination, Auditory Word-Picture Discrimination, Figure and Pattern Matching, and Visual Design Memory and Recall. The ranks for these seven factors were summed and a new ranking obtained on the basis of the summations as shown in Table 1.

In addition to determining rank orders for the predictors and differentiators on the basis of reported research findings, analyses were made of the ratings of the factors by the authorities on reading and on the disadvantaged. The experts' rankings were tabulated, and rank order correlations were calculated for all possible pairs of respondents in each of the two groups. A coefficient of concordance (Kendall's W) was computed for each group and subjected to a Chi square test of significance $\left[\chi r^2=(W)\ (m)\ (n-1)\right]$. In order to procure ordered lists of predictors and differentiators that could be compared with those obtained from the literature, the authorities' ranks on each factor were averaged, and the factors were reranked accordingly. Finally, rank order correlations were obtained between the empirical lists and the authorities' lists. No effort was made to combine the authorities' ratings with the empirical rankings. However, the analyses of the authorities' responses are of interest in themselves.

Eighteen out of 21 authorities in the field of reading responded to the questionnaire although 4 of them did not perform the ranking task. The ranks assigned to the nine predictors by the 14 who did the rating are shown in Table 2 along with average ranks and the final ranking. The rho correlation between the authorities' list (Table 2) and the empirical list (Table 1) was .78 and was significant at the .01 level.

TABLE 2

Ranking of Predictors of Success in Reading Comprehension by Authorities on Reading

[Underlined ranks assigned because raters did not rank all factors]

Predictor	Rater*														Sum of Ranks	Rank Order of Summed Ranks
	Barrett	Chall	de Hirsch	Dykstra	Harris	Robinson, H.	Robinson, H. A.	Spache	Tinker	Smith, D.	Smith, N.	Durrell	Gates	Sheldon		
Reading Letters & Numbers	1	1	1	1	1	3	2	2	3	2	2.5	1	1	1	22.5	1
Visual Word Discrimination	3	2	3	4	2	4	1	9	2	1	2.5	3	2	5.5	44.0	2
Auditory Discrimination	2	9	5	2	3	1	8	1	1	6.5	2.5	2	3	5.5	51.5	3
Figure & Pattern Matching	8	5	2	6	9	2	4	7	4	6.5	2.5	6.5	6.5	5.5	74.5	4
Auditory Word Association & Analogy	6	4	7	7	5	5	6	4	6	6.5	6	6.5	6.5	5.5	81.0	5
Figure & Pattern Copying	5	3	4	9	4	6	5	6	9	6.5	8.5	6.5	6.5	5.5	84.5	6
Visual Design Memory & Recall	9	6	6	8	7	7	3	8	7	3	6	6.5	6.5	5.5	88.5	7
Auditory Word-Picture Discrimination	7	7	8	3	8	8	7	5	5	6.5	8.5	6.5	6.5	5.5	91.5	8
Auditory Memory	4	8	9	5	6	9	9	3	8	6.5	6	6.5	6.5	5.5	92.0	9

* See list of authorities for full name and institutional affiliation, p. 12.

As shown in Table 3, intercorrelations ranging from -.43 to +.88 were obtained for the nine reading experts who ranked all nine predictors. This range probably reflects differences in pedagogical approaches to the teaching of reading for the respondents included proponents of both phonetic and sight methods.

TABLE 3

Correlation Matrix
Authorities' Rankings of Reading Predictors*

Authority	1	2	3	4	5	6	7	8	9
1 Barrett	—								
2 Chall	.23	—							
3 deHirsch	.32	.68	—						
4 Dykstra	.67	-.07	.20	—					
5 Harris	.88	.50	.43	.42	—				
6 Robinson, H.	.38	.22	.75	.37	.38	—			
7 Robinson, H. A.	.02	.82	.75	-.03	.33	.32	—		
8 Spache	.46	-.31	-.14	.48	.29	.16	-.43	—	
9 Tinker	.48	.05	.48	.77	.40	.77	.27	.16	—

*Raters whose rankings included several tied ranks or who failed to rank all predictors not included.

In spite of the wide range of rho correlations, the coefficient of concordance for the nine experts was .35 and was significant at the .01 level with a Chi square value of 24.93. This significant concordance may

be attributed to the extent of agreement on three of the nine factors. All nine authorities ranked "Reading Letters and Numbers" among the top three in importance, and five of them (56%) assigned it the number one position. Six of the group (67%) ranked "Auditory Discrimination" first, second or third; and six (67%) put "Visual Word Discrimination" in one of the three top positions. There was a similar consensus for the total group of respondents. All 14 raters placed "Reading Letters and Numbers" among the first three, and 8 (57%) gave it rank 1; 9 (67%) named "Auditory Discrimination" among the top three; and 10 (71%) put "Visual Word Discrimination" in one of the first three positions.

Only 13 out of 20 authorities on the disadvantaged responded to the questionnaire, and, of these, three did not perform the ranking task. The authorities' rankings of the differentiators are given in Table 4 along with average rankings and the resultant ordering of the factors. The correlation between the authorities' composite rankings and those obtained from the empirical literature was .17 and was not statistically significant. This might be attributed to the paucity of empirical data on the disadvantaged and the fact that four of the differentiators were identified in a study as yet unpublished.

There was agreement among the authorities on the disadvantaged as evidence by a coefficient of concordance of .44 which was significant at the .01 level. However, this group showed greater agreement on the assignment of low ranks than on the assignment of high ranks. Eight of the 10 raters put "Figure and Pattern Copying" in the three lowest positions, and 8 assigned rank 7 or 8 to "Figure and Pattern Matching." The raters who assigned one of these factors rank 8 usually assigned the other rank 7 or visa versa. As for the high ranking factors, only on "Reading Letters

TABLE 4

Ranking of Differentiators by
Authorities on the Disadvantaged

Differentiator	Rater*										Sum of Ranks	Rank Order of Summed Ranks
	Ausubel	Clark	Deutsch	Feldmann	Goldberg	Goldstein	Gordon	Hunt	Passow	Spain		
Reading Letters & Numbers	2	2	1	2	1	1	1	4	5	1	20	1
Auditory Word Association & Analogy	4	1	2	5	3	6	3	2	6	3	35	2
Concept Formation	1	3	3	7	2	8	2	6	1	5	38	3
Auditory Word-Picture Discrimination	5	5	6	4	5	3	4	1	4	2	39	4
Auditory Discrimination	3	4	5	3	7	2	5	5	3	4	41	5
Visual Design Memory & Recall	6	8	4	6	4	7	6	3	2	8	54	6
Figure & Pattern Matching	8	6	8	1	6	4.5	7	7	8	7	62.5	7
Figure & Pattern Copying	7	7	7	8	8	4.5	8	8	7	6	70.5	8

* See list of authorities for full name and institutional affiliation, p. 12.

and Numbers" was there similar unity. Eight placed it the top two positions, five giving it rank 1 and three rank 2. As shown in Table 5, the rank order correlations between pairs of raters ranged from -.33 to +.88.

TABLE 5

Correlation Matrix
Authorities' Rankings of Differentiators

Authority	1	2	3	4	5	6	7	8	9	10
1 Ausubel	—									
2 Clark	.74	—								
3 Deutsch	.79	.71	—							
4 Feldmann	-.05	.24	-.05	—						
5 Goldberg	.67	.62	.86	.10	—					
6 Goldstein	.07	.19	-.03	.64	-.16	—				
7 Gordon	.88	.83	.86	.17	.88	.11	—			
8 Hunt	.24	.31	.45	.14	.43	.09	.48	—		
9 Passow	.64	.05	.43	-.33	.38	-.32	.43	.31	—	
10 Spain	.60	.76	.52	.31	.43	.61	.74	.50	.00	—

Discussion

To recapitulate, in an attempt to establish empirical bases for a prekindergarten curriculum that would prepare disadvantaged children for later school experiences, the literature on reading and on the disadvantaged was reviewed and lists of factors predicting success in reading comprehension and differentiating between disadvantaged and nondisadvantaged children were established. The statistical data on nine predictors and eight differentiators were reduced to a common correlational form, and the factors on each list were ranked on the basis of the results. Rankings for the seven factors appearing on both lists were then combined, and a new ranking established. The common factors in their final rank order were: Reading Letters and Numbers, Auditory Discrimination, Figure and

Pattern Copying, Auditory Word Association and Analogy, Auditory Word-Picture Discrimination, Figure and Pattern Matching, and Visual Design Memory and Recall.

An interim step in the project was the review and ranking of the lists of predictors and differentiators by authorities in the fields of reading and the disadvantaged respectively. The rankings of the experts were analyzed in order to compare their evaluations with the empirical findings and to ascertain the extent of agreement among them. While there was significant agreement within both groups of authorities, only the ranking of the experts in the field of reading correlated significantly with the ranking from the empirical data. It is suggested that the lack of agreement between the authorities on the disadvantaged and the empirical data is due to the limited research as yet published in this field.

While the analyses of the authorities' views and the extent of agreement among them is in itself interesting, the more important outcome of this project is the ranked list of empirical predictors and differentiators. It provides a starting point for the development of a compensatory prekindergarten curriculum that might really enhance the learning prospects of disadvantaged children. The next step is to design and field test a program of instruction that will give due consideration to the relative standing of the factors on the ranked list and that will be specifically directed toward the designated behaviors.

Authorities on Reading and on the Disadvantaged

Ausubel, David P.	The Ontario Institute for Studies in Education, University of Toronto
Barrett, Thomas	University of Wisconsin
Chall, Jeanne	Harvard University
Clark, Ann D.	Wisconsin State Department of Public Instruction
de Hirsch, Katrina	Pediatric Language Disorder Center, Columbia Presbyterian Medical Center
Deutsch, Martin	Institute for Developmental Studies, New York University
Durrell, Donald	Boston University
Dykstra, Robert	University of Minnesota
Feldmann, Shirley	City College, City University of New York
Gates, Arthur I.	Teachers College, Columbia University
Goldberg, Mariam	Teachers College, Columbia University
Goldstein, Leo S.	Institute for Developmental Studies, New York University
Gordon, Edmund	Yeshiva University
Harris, Albert	City University of New York
Hunt, J. McVickers	University of Illinois
Passow, A. Harry	Teachers College, Columbia University
Robinson, H. Alan	Hofstra University
Robinson, Helen M.	University of Chicago
Sheldon, William	Syracuse University
Smith, Donald E.	University of Michigan
Smith, Nila Banton	Glassboro State College
Spache, George D.	University of Florida
Spain, Clarence	Schenectady (N. Y.) Public Schools
Tinker, Miles A.	University of Minnesota (Emeritus)

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